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The Scope of Pharma Business in India

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Research Article

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ABSTRACT

The pharmaceutical industry is one of the demanding and dynamic sectors of Indian economy. As health care continues to grow and account for a significant portion of the economy the importance of the sector is increasing day by day. Successful pharmaceutical executives possess a broad business base, combined with an in-depth knowledge of the industry. Successful managers need to achieve a level of competence in the areas of fundamental management within the industry. The multinational companies had dominated the Indian market due to the lack of patient protection by the Indian Players. As the multinationals streamed out, the Indian players are facing the challenges and became niche in both the Indian as well as world market. There are few companies those who are taking baby steps for the innovation of new drugs and doing R&D for the various diseases. The article is belongs to the present and future situation of Indian Pharma Markets and scope for the Indian and foreign player and regarding the opportunities.

INTRODUCTION

The number of sole Indian Pharma companies is fairly low in Indian Market. It is dominated by the foreign companies having the subsidiaries in India due to the cheap labor cost and talented scientist ^[1,2]. In the year 2002, over 20,000 pharmaceutical manufactures registered in India sold \$9 billion worth of formulations and bulk drugs ^[3-5]. 85% of these formulations were sold in India while over 60% of the bulk drugs were exported, mostly to the United States and Russia ^[6]. Most of the players in the market are SMEs and at the same time it is controlled by the more than 250 companies which control of 70% of the total Indian market ^[7-10].

Most Pharma companies operating in India, even the multinationals, employ Indians almost exclusively from the lowest ranks to high level management. Homegrown pharmaceuticals, like many other businesses in India, are often a mix of public and private enterprise. In terms of global market India is growing at a 10 % (approx) by every year ^[11-13].

INDIAN PHARMA SECTOR

The Indian pharmaceutical market is one of the demanding market for players and investors in the globe which possess the 3rd place in terms of volume and 13th place in terms of the value. The branded companies are dominating the market by 70 to 80 percent of the total market ^[14-17]. Indian is the largest provider of the generic drugs globally which is accounting for the 20 percent of the total global export in terms of volume ^[18-21]. The consolidation has become one of the important characteristic of the Indian Pharmaceutical market as the industry is highly fragmented. The country is having the large pool of talented man power in terms of scientist and engineers, who have the potentials to steer the industry ahead an even higher level. Let's take an overview on the Indian Pharmaceutical Sector ^[21-24]. Today 80 percent of the antiviral drugs used globally to combat for HIV are supplied by the Indian player ^[25-29]. India produce the 40-70% of the WHO demanded for DPT and BCG and 90 percent of the measles vaccine. Seventy percent of the patients in the developing countries used to receive the Indian medicine through various international NGOs ^[30].

There are more than 10500 manufacturing units and over than 3000 companies are recorded in India out of which more than 1400 are WHO GMP approved manufacturing units. India has been accredited with approximately 1,105 CEPs, more than 950 TGA approvals and 584 sites approved by the USFDA [31-35]. Globally more than 90 per cent of formulations approvals for Anti-retroviral (ARVs), Anti-tubercular & Anti-malarial (WHO pre-qualified) has been granted to India [36-40]. Manufacturing costs in India are approximately 35-40 per cent of those in the US due to low installation and manufacturing costs. India ranks amongst the top global generic formulation exporters in volume terms [41-45]. There are 74 US FDA approved manufacturing in India which is more than any other country in the world. Almost 20 percent of new drug applications to the FDA are generally filled by the Indian countries [46-50].

Export

The export of drugs is calculated about \$16.8 bn and the countries pharmaceutical industry accounts for about 1.4 per cent of the global pharmaceutical industry in value terms and 10 per cent in volume terms [51-54].

Rank	Country	Value (US\$)	Share
1	United States	\$3.8 billion	32.9%
2	South Africa	\$461.1 million	3.9%
3	Russia	\$447.9 million	3.8%
4	United Kingdom	\$444.9 million	3.8%
5	Nigeria	\$385.4 million	3.3%
6	Kenya	\$233.9 million	2%
7	Tanzania	\$225.2 million	1.9%
8	Brazil	\$212.7 million	1.8%
9	Australia	\$182.1 million	1.6%
10	Germany	\$178.8 million	1.5%

Data As per 2014 import.

Product Development

Indian Companies are starting on the research and development for the new opportunities with new environment. Although the initial stage investment is more and companies are lured by the promise of the hefty profit margin. Local firms are slowly investing more money in the R&D programs or forming the alliance to grab these opportunities [55,56]. The Indian companies are merging with so many foreign players to avail this opportunities and creating the brand image in the global market.

Little and medium ventures

As promising as what's to come is for an entire, the standpoint for little and medium endeavors (SME) is not as brilliant. The extract structure changed when so that organizations now need to pay a 16% duty on the greatest retail value (MRP) of their items, rather than on the ex-industrial facility cost [57-60]. Thus, bigger organizations cut back on outsourcing and what business is left moved to organizations with offices in the four tax-exempt states – Himachal Pradesh, Jammu and Kashmir, Uttaranchal, and Jharkhand [61-65]. Therefore, countless producers moved their plant to these states, as it turned out to be verging on difficult to keep working in non-tax exempt zones. In any

case, in a matter of a few years the extract obligation was updated on two occasions, first it was diminished to 8% and afterward to 4%. Subsequently, the advantages of moving to a tax exempt zone were discredited. This brought about; plants in the tax exempt zones, to fire up outsider assembling ^[66-70]. Under this these manufacturing plants delivered merchandise under the brand names of different gatherings on employment work premise.

As SMEs grappled with the duty structure, they were likewise scrambling to meet the 1 July deadline for consistence with the reconsidered Schedule M Good Manufacturing Practices (GMP). While this ought to be valuable to customers and the business everywhere, SMEs have been thinking that it's hard to discover the assets to redesign their assembling plants, bringing about the conclusion of numerous offices ^[71-73]. Others contributed the cash to convey their offices to consistence, yet these operations were situated in non-tax-exempt states, making it hard to contend in the wake of the new extract charge ^[74-77].

Dissimilar to in different nations, the contrast amongst biotechnology and pharmaceuticals remains genuinely characterized in India, with biotech a much littler part of the economy. India represented 2% of the \$41 billion worldwide biotech market and in 2003 was positioned third in the Asia-Pacific area and thirteenth on the planet in number of biotech. In 2004-5, the Indian biotech industry saw its incomes grow 37% to \$1.1 billion ^[78-82]. The Indian biotech business sector is ruled by bio pharmaceuticals; 76% of 2004-5 incomes originated from bio-pharmaceuticals, which saw 30% development a year ago. Of the incomes from bio-pharmaceuticals, immunizations drove the way, involving 47% of offers ^[83-88]. Biologics and expansive particle drugs tend to be more costly than little atom medications, and India wants to clear the business sector in bio-generics and contract fabricating as medications go off patent and Indian organizations update their assembling capacities.

Most organizations in the biotech division are to a great degree little, with just two firms softening 100 million dollars up incomes. Last time anyone checked there were 265 firms enlisted in India, more than 92% of which were fused in the most recent five years. The freshness of the organizations clarifies the business' high solidification in both physical and money related terms. Very nearly 30% of all biotech are in or around Bangalore, and the main ten organizations catch 47% of the business sector. The main five organizations were homegrown; Indian firms represent 72% of the bio-pharma area and 52% of the business as a whole. The Association of Biotechnology-Led Enterprises (ABLE) is planning to develop the business to \$5 billion in incomes created by 1 million workers by 2009, and information from the Confederation of Indian Industry (CII) appear to propose that it is conceivable^[89,90].

This segment depends to a great extent or totally upon a solitary source. Significant examination might be found on the discussion page. It would be ideal if you enhance this article by acquainting references with extra sources. (June 2016). The Indian biotech segment parallels that of the US from multiple points of view. Both are loaded with little new businesses while most of the business sector is controlled by a couple of effective organizations. Both are reliant upon government concedes and financial speculators for subsidizing in light of the fact that neither one of the wills be economically practical for a considerable length of time. Pharmaceutical organizations in both nations see development potential in biotechnology and have either put resources into existing new companies or wandered into the field themselves ^[91-93].

Government Support

The Indian government set up the Department of Biotechnology in 1986 under the Ministry of Science and Technology. From that point forward, there have been various administrations offered by both the focal government and different states to support the development of the business. India's science clergyman dispatched a system that gives charge motivating forces and gives to biotech new businesses and firms trying to grow and sets up the Biotechnology Parks Society of India to bolster ten biotech parks by 2010. Already restricted to rodents, creature testing was extended to incorporate substantial creatures as a feature of the priest's drive. States have begun to compete with each other for biotech business, and they are putting forth such treats as exclusion from VAT and different charges, money related help with licenses and appropriations on everything going from venture to land to utilities ^[94-96].

The biotechnology part confronts some significant difficulties in its journey for development. Boss among them is an absence of financing, especially for firms that are simply beginning. The undoubtedly wellsprings of assets are government allows and investment, which is a moderately youthful industry in India. Government awards are hard to secure, and due to the costly and indeterminate nature of biotech examination, financial speculators are hesitant to put resources into firms that have not yet built up an industrially reasonable item ^[97,98].

The legislature has tended to the issue of taught yet unfit hopefuls in its Draft National Biotech Development Strategy. This arrangement incorporated a proposition to make a National Task Force that will work with the biotech business to update the educational modules for undergrad and graduate study in life sciences and biotechnology. The administration's system additionally expressed goals to expand the quantity of PhD Fellowships recompensed

by the Department of Biotechnology to 200 every year. These HR will be further utilized with a "Bio-Edu-Grid" that will weave together the assets of the scholarly and exploratory modern groups, much as they are in the US [99,100].

CONCLUSION

The pharmaceutical industry is one of the demanding and dynamic sectors of Indian economy. The opportunities for the Indian Pharma Industry in India are high with the support of the government and the multinational player playing in the globe. As per the data Indian Pharma companies are the valuable contributor to the foreign market. As we have the full of natural resources, funding support, liberal policy and talented manpower available, the scope for the sector is high.

REFERENCES

1. Aissaoui T. Novel Contribution to the Chemical Structure of Choline Chloride Based Deep Eutectic Solvents. *Pharm Anal Acta*. 2015; 6:448.
2. Mworja JK, et al. Analgesic Potential of Acetone Leaf Extract of *Caesalpinia volkensii* harms in Mice. *Pharm Anal Acta*. 2015; 6:450.
3. Kobayashi T and Tovar-Carrillo KL. Fibroblast Cell Cultivation on Wooden Pulp Cellulose Hydrogels for Cytocompatibility Scaffold Method. *Pharm Anal Acta*. 2015; 6:423.
4. Bhusnure OG, et al. Drug Target Screening and its Validation by Zebrafish as a Novel Tool. *Pharm Anal Acta*. 2015;6:426.
5. Krithiga J and Briget MM. Synthesis of Agnps of *Momordica charantia* Leaf Extract, Characterization and Antimicrobial Activity. *Pharm Anal Acta*. 2015;6:427.
6. Gonzalez-Weller D, et al. Dietary Content and Evaluation of Metals in Four Types of Tea (White, Black, Red and Green) Consumed by the Population of the Canary Islands. *Pharm Anal Acta*. 2015;6:428.
7. Muriithi NJ, et al. Determination of Hematological Effects of Methanolic Leaf Extract of *S. incanum* in Normal Mice. *Pharm Anal Acta*. 2015;6:429.
8. Jana S, et al. Characterization of Physicochemical and Thermal Properties of Chitosan and Sodium Alginate after Biofield Treatment. *Pharm Anal Acta*. 2015;6:430.
9. Bhasin S and Patel R. Enhanced Oral Bioavailability of Alitretinoin by Lipid Drug Delivery System. *Pharm Anal Acta*. 2015;6:433.
10. Vadhana P, et al. Emergence of Herbal Antimicrobial Drug Resistance in Clinical Bacterial Isolates. *Pharm Anal Acta*. 2015;6:434.
11. Pawar HA and Yadav A. Development and Application of Rp-Hplc Method for Dissolution Study of Oral Formulations Containing Amlodipine Besylate. *Pharm Anal Acta*. 2015;6:437.
12. Kojima S, et al. Broadband Terahertz Time-Domain and Low-Frequency Raman Spectroscopy of Crystalline and Glassy Pharmaceuticals. *Pharm Anal Acta*. 2015;6:401.
13. Lin SY, et al. Effect of Povacoat or Soluplus on Solid-State Characterization of Indomethacin-Nicotinamide Co-Crystal Formation. *Pharm Anal Acta*. 2015;6:402.
14. Kino K, et al. Commentary on the Phototoxicity and Absorption of Vitamin B2 and Its Degradation Product, Lumichrome. *Pharm Anal Acta*. 2015;6:403.
15. Romkens TEH, et al. Urinary Excretion Levels of MMX-Mesalazine as a Tool to Assess Non-Adherence. *Pharm Anal Acta*. 2015;6:443.
16. Rashid MA, et al. Fluorescence Spectroscopic Study of Interaction between Olanzapine and Bovine Serum Albumin. *Pharm Anal Acta*. 2015;6:408.
17. Kumar R. An Analysis of Indian Pharma Trade and Future Challenges. *Pharm Anal Acta*. 2015;6:409.
18. Kumar S, et al. An Improved and Sensitive Method for Vitamin D3 Estimation by RP-HPLC. *Pharm Anal Acta*. 2015; 6:410.
19. Kobayashi T and Tovar-Carrillo KL. Fibroblast Cell Cultivation on Wooden Pulp Cellulose Hydrogels for Cytocompatibility Scaffold Method. *Pharm Anal Acta*. 2015;6:423.
20. Lokesh BVS and Kumar PV. Enhanced Cytotoxic Effect of Chemically Conjugated Polymeric Sirolimus against HT-29 Colon Cancer and A-549 Lung Cancer Cell Lines. *J Pharm Drug Deliv Res*. 2015;4:2.
21. Scott D and Bae Y. Block Copolymer Crosslinked Nanoassemblies Co-entrapping Hydrophobic Drugs and Lipophilic Polymer Additives. *J Pharm Drug Deliv Res*. 2013;2:2.

22. Musirike MR, et al. Development and Validation of Reverse Phase-Ultra Performance Liquid Chromatographic Method for Estimation of Related Substances in Febuxostat Drug Substance. *Pharm Anal Acta*. 2015;6:431.
23. Andreotti R, et al. Diflubenzuron Effectiveness in Cattle Tick (*Rhipicephalus Boophilus microplus*) Control in Field Conditions. *Pharm Anal Acta*. 2015; 6:373.
24. Radu CD, Parteni O, Popa M, Muresan IE, Ochiuz L, et al. Comparative Study of a Drug Release from a Textile to Skin. *J Pharm Drug Deliv Res*.2015;4:2.
25. Pardhi D, et al. Evaluation of the Potential of Natural Biodegradable Polymers (*Echinochloa Colonum* Starch) and its Derivatives in Aqueous Coating of Hydrophilic Drugs. *J Pharm Sci Emerg Drugs*. 2016;4:1.
26. Kipping T and Rein H. Development of Extruded Starch Based Formulations Aimed for Local Drug Delivery to Oral Cavity. *J Pharm Drug Deliv Res*. 2012;1:1.
27. Gunjan J and Swarnlata S. Topical Delivery of Curcuma Longa Extract Loaded Nanosized Ethosomes to Combat Facial Wrinkles. *J Pharm Drug Deliv Res*. 2014;3:1.
28. Meier-Davis SR, et al. Enhancing the Skin Flux of Tolnaftate Utilizing the Novel Excipient, Dodecyl-2-N,N-Dimethylaminopropionate (DDAIP). *J Pharm Drug Deliv Res*. 2012;1:1.
29. Vijayarajkumar P et al. Efavirenz Loaded Novel Citric Acid Dendritic Architecture for Increased Solubility and Sustained Delivery. *J Pharm Drug Deliv Res*. 2012;1:1.
30. Saxena Brij B, et al. Development of a Nanoporous Elastomere Intra-Vaginal Ring (IVR) for the Sustained Release of Non-Hormonal Contraceptives. *J Pharm Drug Deliv Res*. 2012;1:1.
31. Akintunde JK, et al. Sub-Chronic Treatment of Sildenafil Citrate (Viagra) on some Enzymatic and Non-enzymatic Antioxidants in Testes and Brain of Male Rats. *J Pharm Drug Deliv Res*. 2012;1:2.
32. Al-Malah KI. Prediction of Aqueous Solubility of Organic Solvents as a Function of Selected Molecular Properties. *J Pharm Drug Deliv Res*. 2012;1:2.
33. D'Cruz OJ, Uckun FM Targeting Spleen Tyrosine Kinase (SYK) for Treatment of Human Disease. *J Pharm Drug Deliv Res*.2012;1:2.
34. Tarro G. Anti-Rhinovirus Activity of Ethyl 4-(3-(2-(3-Methylisoxazol- 5-Yl) Ethoxy) Propoxy) Benzoate (EMEB). *Pharm Anal Acta*. 2016; 7:469.
35. Sharma B et al. Formulation, Optimization and Evaluation of Atorvastatin Calcium Loaded Microemulsion. *J Pharm Drug Deliv Res*. 2012;1:3.
36. Zhou Y, et al. Therapeutic Effects of Sinomenine Microemulsion-Based Hydrogel on Adjuvant-Induced Arthritis in Rats. *J Pharm Drug Deliv Res*. 2012;1:3.
37. ElShaer, et al. Preparation and Evaluation of Amino Acid Based Salt Forms of Model Zwitterionic Drug Ciprofloxacin. *J Pharm Drug Deliv Res*. 2013;2:1.
38. Frank T. Population Pharmacokinetics of Lixisenatide, a Once-Daily Human Glucagon-Like Peptide-1 Receptor Agonist, in Healthy Subjects and in Patients with Type 2 Diabetes. *J Pharm Drug Deliv Res*. 2013;2:1.
39. Akash MSH et al. Characterization of Ethylcellulose and Hydroxypropyl Methylcellulose Microspheres for Controlled Release of Flurbiprofen. *J Pharm Drug Deliv Res*. 2013;2:1.
40. Isabel S. Encapsulation of Fluoroquinolones in 1-Palmitoyl-2-Myristoyl-Phosphatidylcholine: Cholesterol Liposomes. *J Pharm Drug Deliv Res*. 2013;2:1.
41. Satya Krishna HP, et al. Solubility and Dissolution Enhancement of Candesartan Cilexetil by Liquisolid Compacts. *J Pharm Drug Deliv Res*. 2013;2:2.
42. Mohamed Idrees RY and Khalid A. Comparative Modeling of Serotonin Receptors 5ht2a and 5ht2c and In-silico Investigation of their Potential as Off-Target to Ethinylestradiol. *J Pharm Drug Deliv Res*. 2013;2:2.
43. Chopra AK, et al. Box-Behnken Designed Fluconazole Loaded Chitosan Nanoparticles for Ocular Delivery. *J Pharm Drug Deliv Res*. 2014;3:1.
44. Dey B, et al. Comparative Evaluation of Hypoglycemic Potentials of Eucalyptus Spp. Leaf Extracts and their Encapsulations for Controlled Delivery. *J Pharm Drug Deliv Res*. 2014;3:2.
45. Efentakis M and Siamidi A Design and Evaluation of a Multi-Layer Tablet System Based on Dextran. *J Pharm Drug Deliv Res*. 2014;3:2.
46. Humayoon R, et al. Quality Control Testing and Equivalence of Doxycycline Hyclate (100 mg) Capsule Brands under Biowaiver Conditions. *J Pharm Drug Deliv Res*. 2014;3:2.
47. Shin DG, et al. A Methylation Profile of Circulating Cell Free DNA for the Early Detection of Gastric Cancer and the Effects after Surgical Resection. *J Clin Exp Oncol*. 2016;5:1.

48. Brijesh KV, et al. Physicochemical Characterization and In-Vitro Dissolution Enhancement of Bicalutamide-Hp-B-Cd Complex. *J Pharm Drug Deliv Res.* 2015;3:2.
49. Panchangam RBS, et al. Engineered Nanoparticles for the Delivery of Anticancer Therapeutics. *J Pharm Drug Deliv Res.* 2015;4:1.
50. Olaso I, et al. A Comparative Study of the Treatment of Giardiasis with Commercially Marketed Medicine, Metronidazol with Compounding Medicine at a Rural Hospital in Ethiopia. *J Pharm Drug Deliv Res.* 2016; 5:2.
51. Hasegawa H, et al. Sitagliptin Inhibits the Lipopolysaccharide-Induced Inflammation. *J Pharm Drug Deliv Res* 2016;5:2.
52. Král V, et al. Multifunctional Bile Acid Derivatives as Efficient RNA Transporters (Carriers). *J Pharm Drug Deliv Res.* 2016;5:2.
53. Parvathi MVS, et al. Micro RNA-142-5p Profile as a Predictor of Tumor Markers Regulation in Different Histological Grades of Human Breast Carcinoma. *J Clin Exp Oncol.* 2016;5:2.
54. Kaliappan I, Structural Elucidation of Possible Metabolic Profile of Mangiferin by Oral and Intraperitoneal Administration. *J Pharm Drug Deliv Res.* 2015; 4:1.
55. Coyne CP, Narayanan L Fludarabine-(C2-methylhydroxyphosphoramidate)-[anti-IGF-1R]: Synthesis and Selectively “Targeted” Anti-Neoplastic Cytotoxicity against Pulmonary Adenocarcinoma (A549). *J Pharm Drug Deliv Res.* 2015;4:1.
56. Koteswari P, et al. Fabrication of a Novel Device Containing Famotidine for Gastro Retentive Delivery Using Carbohydrate Polymers. *J Pharm Drug Deliv Res.* 2015;4:1.
57. Bassani AS, et al. In Vitro Characterization of the Percutaneous Absorption of Lorazepam into Human Cadaver Torso Skin, Using the Franz Skin Finite Dose Model. *J Pharm Drug Deliv Res.* 2015;4:2.
58. Satyavathi K, et al. Formulation and In-Vitro Evaluation of Liposomal Drug Delivery System of Cabazitaxel. *J Pharm Drug Deliv Res.* 2015;4:2.
59. Mahipalreddy D, et al. Preparation and Evaluation of Ketoprofen Enteric Coated Mini Tablets for Prevention of Chronic Inflammatory Disease. *J Pharm Drug Deliv Res.* 2015;4:2.
60. Ogaji IJ, Okafor IS, Hoag SW Some Characteristics of Theophylline Tablets Coated with Samples of Grewia Gum obtained from a Novel Extraction. *J Pharm Drug Deliv Res.* 2014;3:1.
61. Wiley TS, et al. H1R Antagonists for Brain Inflammation and Anxiety: Targeted Treatment for Autism Spectrum Disorders. *J Pharm Drug Deliv Res.* 2015;4:3.
62. Tsompos C, et al. The Effect of the Antioxidant Drug “U-74389G” on Uterus Inflammation during Ischemia Reperfusion Injury in Rats. *J Pharm Sci Emerg Drugs.* 2015;3:1.
63. Nair AK, et al. Development and Comparative Assessment of Hydrocolloid Based Against Wax Based Gastro Retentive Bilayered Floating Tablet Designs of Atorvastatin Calcium Using Qbd Approach. *J Pharm Drug Deliv Res.* 2015;4:3.
64. Ibtehal S, et al. Preparation of Zaleplon Microparticles Using Emulsion Solvent Diffusion Technique. *J Pharm Drug Deliv Res.* 2012;1:3.
65. Solomon AO, et al. Making Drugs Safer: Improving Drug Delivery and Reducing Side-Effect of Drugs on the Human Biochemical System. *J Pharm Drug Deliv Res.* 2015;4:4.
66. Orji JI, et al. Physicochemical Properties of Co-Precipitate of Plantain Peel Cellulose and Gelatin. *J Pharm Drug Deliv Res.* 2015;4:4.
67. Parteni O, et al. The Release of Tacrolimus from a Cotton Biomaterial to Dermis. *J Pharm Drug Deliv Res.* 2016; 5:1.
68. Trivedi MK, et al. Characterization of Physical, Thermal and Spectral Properties of Biofield Treated O-Aminophenol. *Pharm Anal Acta.* 2015; 6:425.
69. Strehlow B, Bakowsky U, Pinnapireddy SR, Kusterer J, Mielke G, et al. A Novel Microparticulate Formulation with Allicin In Situ Synthesis. *J Pharm Drug Deliv Res.* 2016;5:1.
70. Lee S, et al. Lifetime Assessment of POCT Strips through Accelerated Degradation Test. *Pharm Anal Acta.* 2016; 7:475.
71. Abdou EM and Ahmed NM. Terconazole Proniosomal Gels: Effect of Different Formulation Factors, Physicochemical and Microbiological Evaluation. *J Pharm Drug Deliv Res.* 2016;5:1.
72. Adesina SK, et al. Nanoparticle Characteristics Affecting Efficacy. *J Pharm Drug Deliv Res.* 2016;5:1.

73. Parteni O, et al. The Release of Tacrolimus from a Cotton Biomaterial to Dermis. *J Pharm Drug Deliv Res* 2016;5:1.
74. Strehlow B, et al. A Novel Microparticulate Formulation with Allicin In Situ Synthesis. *J Pharm Drug Deliv Res*. 2016;5:1.
75. Abdou EM and Ahmed NM. Terconazole Proniosomal Gels: Effect of Different Formulation Factors, Physicochemical and Microbiological Evaluation. *J Pharm Drug Deliv Res*. 2016;5:1.
76. Adesina SK, et al. Nanoparticle Characteristics Affecting Efficacy. *J Pharm Drug Deliv Res*. 2016;5:1.
77. Girolamo L, et al. Blood Volume Determination Through New Generation 130/0,4 Hydroxyethyl-Starch: A Propaedeutic, In-Vitro Study. *Pharm Anal Acta*. 2015;6:441.
78. Balekari U and Veeresham C. Insulinotropic Agents from Medicinal Plants. *J Pharm Sci Emerg Drugs*. 2014;2:1.
79. Ferreira H, et al. Deformable Liposomes for the Transdermal Delivery of Piroxicam. *J Pharm Drug Deliv Res*. 2015;4:4.
80. Rana VS. Separation and Identification of Swertiamarin from *Enicostema axillare* Lam. Raynal by Centrifugal Partition Chromatography and Nuclear Magnetic Resonance-Mass Spectrometry. *J Pharm Sci Emerg Drugs*. 2014;2:1.
81. Resende GD, et al. First Dose Combination Studies of Anti-Tuberculosis Drugs With Piperic Acid. *J Pharm Sci Emerg Drugs*. 2014;2:1.
82. Chiririwa H. Synthesis, Characterization of Gold (III) Complexes and an in vitro Evaluation of their Cytotoxic Properties. *J Pharm Sci Emerg Drugs*. 2014;2:1.
83. Joshi RR and Devarajan PV Anionic Self Micro-Emulsifying Drug Delivery System (SMEDDS) Of Docetaxel for Circulation Longevity. *J Pharm Drug Deliv Res*. 2015;4:3.
84. Naik DR, et al. Release Kinetics of Cellulosic Nano particulate Formulation for Oral Administration of an Antiviral Drug: Effect of Process and Formulation variables. *J Pharm Sci Emerg Drugs*. 2014;2:1.
85. Patel MN, et al. Synthesis, Characterization and Biological Elucidation of Mixed Ligand Cu (II) Complexes as Artificial Metallonucleases. *J Pharm Sci Emerg Drugs*. 2015;3:1.
86. Swapnil S, et al. Healing Potential of *Citrullus Lanatus* in Acetic Acid Induced Ulcerated Rats. *J Pharm Sci Emerg Drugs*. 2015;3:1.
87. Koly SF, et al. An In Vitro Study of Binding of Aceclofenac and Pantoprazole with Bovine Serum Albumin by UV Spectroscopic Method. *J Pharm Sci Emerg Drugs*. 2016;4:1.
88. Kogawa AC, et al. Characterization of Darunavir: B-Cyclodextrin complex and Comparison with the Forms of Darunavir Ethanolate and Hydrate. *J Pharm Sci Emerg Drugs*. 2016;4:1.
89. Chaube R, et al. Pentachlorophenol-Induced Oocyte Maturation in Catfish *Heteropneustes Fossils*: An In Vitro Study Correlating with Changes in Steroid Profiles. *J Pharm Sci Emerg Drugs*. 2016;4:1.
90. Malshe AG. Hydrogen ion/Proton Dynamics: A Possible Therapeutic Approach in Malignancy Treatment. *J Clin Exp Oncol*. 2016;5:1.
91. Kheir V, et al. Cotton Wool Spots in Trousseau's Syndrome. *J Clin Exp Oncol*. 2015;5:1.
92. Guest TC and Rashid S. Anticancer Laccases: A Review. *J Clin Exp Oncol*. 2016;5:1.
93. Ranjna CD, et al. Inhibiting Human Lactate Dehydrogenase-C for Male Fertility Control; Initial Hits. *J Pharm Drug Deliv Res*. 2014;3:2.
94. Romeira D, et al. Tumor Infiltrating Lymphocytes and Axillary Lymph Node Positivity: A Systematic Review. *J Clin Exp Oncol*. 2016;5:2.
95. Norollahi SE, et al. The Role of MicroRNAs in Cancer Progression. *J Clin Exp Oncol*. 2016; 5:2.
96. Kumar R, et al. Quantum Magnetic Resonance Therapy: Targeting Biophysical Cancer Vulnerabilities to Effectively Treat and Palliate. *J Clin Exp Oncol*. 2016; 5:2.
97. Schmidt C and Brown M. Relating the Pendulum of Democracy with Oncology Research. *J Clin Exp Oncol*. 2015; 4:3.
98. Ayuka F and Barnett R. Place Effects on Alcohol Consumption: A Literature Review. *J Addict Res Ther*. 2015;6:207.
99. Wang WC, et al. Evolving Evidence of Methylglyoxal and Dicarbonyl Stress Related Diseases from Diabetic to Non-Diabetic Models. *Pharm Anal Acta*. 2016;7:473.
100. Mwonga KB, et al. Molluscicidal Effects of Aqueous Extracts of Selected Medicinal Plants from Makueni County, Kenya. *Pharm Anal Acta*. 2015;6:445.